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IS 1155 (1968): Wheat Atta [FAD 16: Foodgrains, Starches and Ready to Eat Foods]

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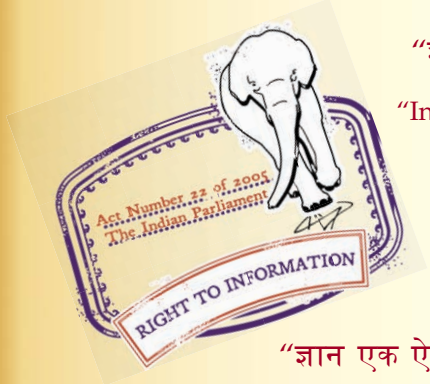

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Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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IS : 1155 - 1968
(Reaffirmed 2005)
2010

Indian Standard
SPECIFICATION FOR WHEAT *ATTA*

(Second Revision)

Seventh Reprint JUNE 2006
(Incorporating Amendment No. 1 and Including Amendment No. 2 & 3)

UDC 664.641.1

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *June* 1968

Indian Standard
SPECIFICATION FOR WHEAT *ATTA*
(Second Revision)

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AMENDMENT NO. 2 JANUARY 1981

TO

IS:1155-1968 SPECIFICATION FOR WHEAT *ATTA*

(Second Revision)

Alteration

(*Page 7, clause A-1.1, lines 3 and 4*) - Substitute '130 to 133 °C for two hours' *for* '105° ± 1°C for five hours'.

(AFDC 32)

Printed at Dee Kay Printers, New Delhi, India

AMENDMENT NO. 3 MARCH 1990
TO
IS : 1155 - 1968 SPECIFICATION FOR WHEAT *ATTA*
(Second Revision)

[*Page* 6 , *Table* 1 , *Sl No.* (ii)] :

a) *Column* (3) — Substitute '2.0' *for* '2.5'.

b) *Column* (4) — Substitute '2.0' *for* '2.5'.

(FADC 16)

Printed at Dee Kay Printers, New Delhi-110015, India.

Indian Standard
SPECIFICATION FOR WHEAT *ATTA*
(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 2 April 1968, after the draft finalized by the Processed Cereals and Pulses Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Wheat *ATTA*, popularly known in English as ' wheat meal ' as distinct from *MAIDA* (*see* IS : 1009-1968*), contains bran as well, though the larger particles of bran are preferably sifted out. Practically all the great bulk of *ATTA* consumed in rural areas in India is produced by grinding wheat in stone mills worked either by hand or by animals. In urban areas, it is produced largely in mechanically operated stone mills and in roller flour mills. This standard is, therefore, intended to cover all types of wheat *ATTA* whether produced in stone mills or in roller flour mills.

0.3 The Sectional Committee responsible for the preparation of this standard took into consideration the available data on the composition of wheat *ATTA* manufactured from different varieties of wheat produced in various parts of India and imported from abroad. In addition to this, due consideration has also been given to the relevant rules prescribed by the Government of India under the *Prevention of Food Adulteration Act, 1954*. This standard is, however, subject to the restrictions imposed under that Act, wherever applicable.

0.4 The ' Indian Standard specification for *ATTA* ' was first published in 1957. In 1965 it was revised to include two grades of *ATTA* besides incorporating modifications in the requirement for crude fibre content. Since then, the position in the supply of wheat has changed considerably and compulsory washing of wheat before milling has been introduced in the country. The limit for moisture content of *ATTA* has, therefore, been raised and the requirement for acidity has been deleted. The limits of acid insoluble ash and alcoholic acidity have also been revised. Besides, the method of determination of gluten content (*see* Appendix D) has been

*Specification for *MAIDA* (*revised*).

revised. The reference to 'fortification' has been deleted as the committee felt that fortified *ATTA* is not being manufactured in the country at present.

0.5 This standard is one of a series of Indian Standard specifications for wheat products. Other specifications published so far in the series are:

IS : 1009-1968 *MAIDA* (*revised*)

IS : 1010-1968 *SUJI* or *RAVA* (semolina) (*revised*)

0.6 This standard contains clauses (*see* **4.1.1** and **4.1.2**) which call for an agreement between the purchaser and the vendor.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of test for wheat *ATTA*.

2. GRADES

2.1 The material shall be of two grades, namely, Low Gluten (LG) and High Gluten (HG).

3. REQUIREMENTS

3.1 Description — The material shall be obtained by milling sound and clean wheat. It shall be in the form of powder having a characteristic taste and flavour. It shall be free from rancidity, insect, rodent or fungus infestation. It shall also be free from fermented, musty or other objectionable odour. It shall not have adulterants and other extraneous matter.

NOTE — The appearance, taste and odour shall be determined by organoleptic tests.

3.2 Microscopic Appearance — When the material is subjected to microscopic examination, the starch granules shall have the characteristic appearance as shown in the photomicrograph reproduced in Fig. 1, revealing concentric rings and more small granules than large ones.

3.3 The material shall be manufactured in premises using equipment maintained under hygienic conditions (*see* IS : 2491-1963†).

*Rules for rounding off numerical values (*revised*).

†Code for sanitary conditions for food processing units. (Since revised).

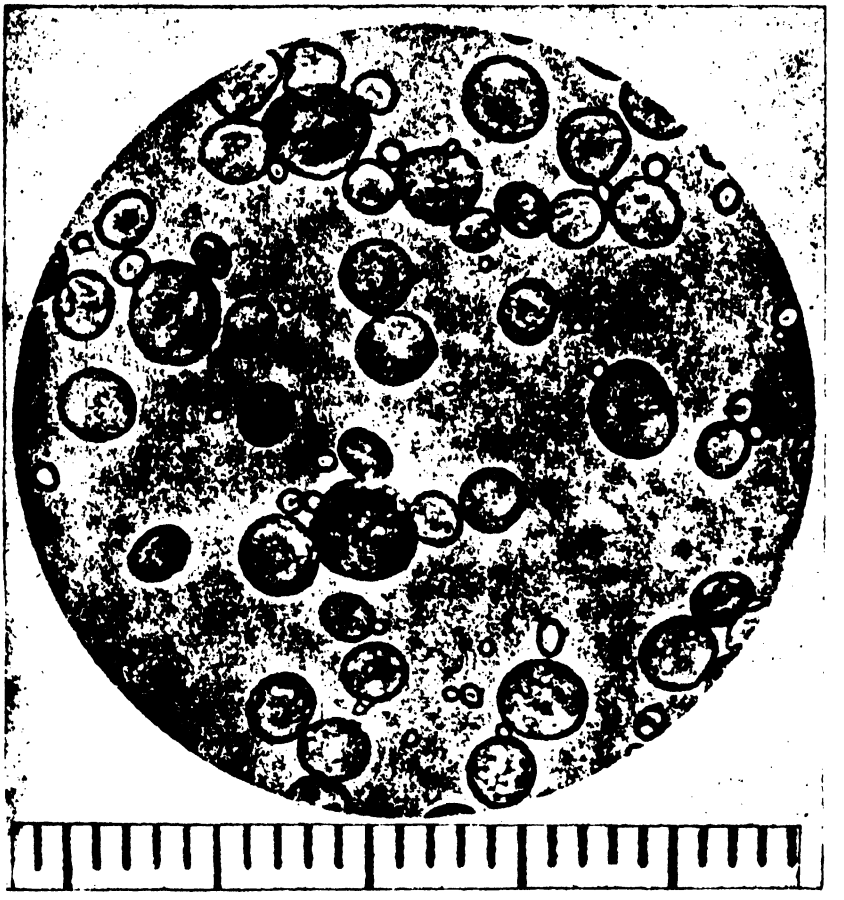

FIG. 1 PHOTOMICROGRAPH OF WHEAT STARCH (× 325)

(Scale : 1 division = 10 microns)

3.4 The material shall also comply with the requirements given in Table 1.

4. PACKING AND MARKING

4.1 Packing — The packages may preferably be of 1 kg, 2 kg, 10 kg, 20 kg, 40 kg, 65 kg, 75 kg, or 90 kg, as desired by the purchaser.

4.1.1 For packages above 65 kg, unless otherwise agreed to between the purchaser and the vendor, the material for packing shall be single, sound A-twill or B-twill jute bags or DW-flour bags conforming to IS : 1943-1964*, IS : 2566-1965† and IS : 3984-1967‡ respectively.

4.1.2 The bags used for smaller packs may be polyethylene bags or polyethylene lined jute bags or any other suitable material as agreed to between the purchaser and the vendor.

4.1.3 The mouth of the bag shall be either machine stitched or hand stitched. If it is hand stitched, the mouth shall be rolled over and then stitched. The stitches shall be in two cross-rows with at least 14 stitches in each row for jute bags of 65 kg and above.

4.2 Marking — Each bag shall be suitably marked so as to give the following information:

a) Name and grade of the material;

b) Name and address of the manufacturer;

c) Batch and code number; and

d) Net weight.

4.2.1 All markings shall be applied on the bags in such a manner that the dye or ink does not penetrate into the material.

TABLE 1 REQUIREMENTS FOR WHEAT *ATTA*

(*Clause* 3.4)

Sl No.	Characteristic	Requirement for Grade		Method of Test (Ref to Appendix)
		LG	HG	
(1)	(2)	(3)	(4)	(5)
i)	Moisture, percent by weight, *Max*	13·0	13·0	A
ii)	Total ash (on dry basis), percent by weight, *Max*	2·5	2·5	B
iii)	Acid insoluble ash (on dry basis), percent by weight, *Max*	0·10	0·10	C
iv)	Gluten (on dry basis), percent by weight, *Min*	7·0 to 9·0	Above 9·0	D
v)	Crude fibre (on dry basis), percent by weight, *Max*	2·5	2·5	E
vi)	Alcoholic acidity (as H_2SO_4), with 90 percent alcohol, percent by weight, *Max*	0·1	0·1	F
vii)	Granularity	To satisfy the test	To satisfy the test	G

*Specification for A-twill jute bags (*revised*).

†Specification for B-twill jute bags (*revised*).

‡Specification for DW-flour bags.

5. SAMPLING

5.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in the Indian Standard methods of sampling for processed cereals and pulses (*see* Note).

NOTE — This standard is under preparation. Until it is published the method of sampling and the criteria for conformity shall be as agreed to between the purchaser and the vendor.

6. TESTS

6.1 Tests shall be carried out as prescribed under **3.1, 3.2** and in the appropriate Appendices specified in col 5 of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS : 1070-1960*) shall be used where the use of water as a reagent is intended.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF MOISTURE

A-1. PROCEDURE

A-1.1 Weigh accurately about 5 g of the material in a dish made of porcelain, silica or platinum, previously dried in an electric oven and weighed. Place the dish in an electric oven maintained at 105° ± 1°C, for five hours. Cool the dish in a desiccator and weigh with the lid on. Repeat the process of heating, cooling and weighing at half-hour intervals until the loss in weight between two successive weighings is less than one milligram. Record the lowest mass obtained.

NOTE — Preserve the dish containing this dried material for the determination of total ash (*see* B-1.1) and crude fibre (*see* E-2.1).

A-2. CALCULATION

A-2.1 Moisture, percent by mass $= \frac{100\,(W_1 - W_2)}{W_1 - W}$

*Specification for water, distilled quality (*revised*).

where

W_1 = mass in g of the dish with the material before drying,

W_2 = mass in g of the dish with the material after drying, and

W = mass in g of the empty dish.

APPENDIX B

[*Table* 1, *Item* (ii)]

DETERMINATION OF TOTAL ASH

B-1. PROCEDURE

B-1.1 Ignite the dried material in the dish (**A-1.1**) with the flame of a suitable burner for about one hour. Complete the ignition by keeping in a muffle furnace at 550 to 600°C until grey ash results. Cool in a desiccator and weigh. Repeat the process of igniting, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Note the lowest mass

NOTE — Preserve the dish containing this ash for the determination of acid insoluble ash (*see* **C-2.1**).

B-2. CALCULATION

B-2.1 Total ash (on dry basis), percent by mass $= \frac{100\ (W_2 - W)}{W_1 - W}$

where

W_2 = mass in g of the dish with the ash,

W = mass in g of the empty dish, and

W_1 = mass in g of the dish with the dried material taken for the test (W_2 under **A-2.1**).

APPENDIX C

[*Table* 1, *Item* (iii)]

DETERMINATION OF ACID INSOLUBLE ASH

C-1. REAGENT

C-1.1 Dilute Hydrochloric Acid — approximately 5 N, prepared from concentrated hydrochloric acid (*see* IS : 265-1962*).

*Specification for hydrochloric acid (*revised*). (Since revised).

C-2. PROCEDURE

C-2.1 To the ash contained in the dish (**B-1.1**) add 25 ml of dilute hydrochloric acid, cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through a Whatman filter paper No. 42 or its equivalent. Wash the filter paper with water until the washings are free from the acid and return it to the dish. Keep it in an electric air-oven maintained at 135 $\pm$ 2°C for about 3 hours. Ignite in a muffle furnace at 550 to 600°C for one hour. Cool the dish in a desiccator and weigh. Repeat the process of igniting in the muffle furnace, cooling and weighing at half-hour intervals until the difference in mass between two successive weighings is less than one milligram. Note the lowest mass

C-3. CALCULATION

C-3.1 Acid insoluble ash (on dry basis), percent by mass $= \frac{100 (W_2 - W)}{W_1 - W}$

where

W_2 = mass in g of the dish with the acid insoluble ash,

W = mass in g of the empty dish, and

W_1 = mass in g of the dish with the dried material (W_2 under **A-2.1**).

APPENDIX D

[*Table* 1, *Item* (iv)]

DETERMINATION OF GLUTEN

D-1. PROCEDURE

D-1.1 Weigh accurately into a dish about 25 g of the material. Add about 15 ml of water to the material and make it into a dough, taking care to see that all the material is taken into the dough. Keep the dough gently in a beaker filled with water and let it stand for one hour. Remove the dough and place it in a piece of bolting silk cloth with an aperture of 0·16 mm size (No. 10 XXX) and wash it with a gentle stream of tap water till water passing through the silk does not turn blue when a drop of iodine solution is added to it. Spread the silk tight on a porcelain plate for facilitating scraping. Transfer the residue from the silk by means of a spatula to a tared porcelain dish. Spread the wet gluten into a thin layer

and cut into small pieces. Transfer any residue sticking to the spatula into the porcelain dish. Place the porcelain dish in an air-oven maintained at 133 ± 2°C. Dry for two hours. Cool in a desiccator and weigh.

D-2. CALCULATION

D-2.1 Gluten (on dry basis), percent by mass $= \frac{10\,000\,(W_2 - W_1)}{W\,(100 - M)}$

where

W_2 = mass in g of porcelain dish with dry gluten,
W_1 = mass in g of the empty porcelain dish,
W = mass in g of the material taken for the test, and
M = moisture, percent by mass (**A-2.1**).

APPENDIX E

[*Table* 1, *Item* (v)]

DETERMINATION OF CRUDE FIBRE

E-1. REAGENTS

E-1.1 Dilute Sulphuric Acid — 1·25 percent (*w/v*), accurately prepared.

E-1.2 Sodium Hydroxide Solution — 1·25 percent (*w/v*), accurately prepared.

E-1.3 Ethyl Alcohol — 95 percent by volume.

E-2. PROCEDURE

E-2.1 Weigh accurately about 2·5 g of the material preserved under **A-1.1** and transfer it to a litre flask. Take 200 ml of dilute sulphuric acid in a beaker and bring to the boil. Transfer the whole of the boiling acid to the flask containing the fat-free material and immediately connect the flask with a water-cooled reflux condenser and heat, so that the contents of the flask begin to boil within one minute. Rotate the flask frequently, taking care to keep the material from remaining on the sides of the flask and out of contact with the acid. Continue boiling for exactly 30 minutes. Remove the flask and filter through fine linen (about 18 threads to the

centimetre) held in a funnel, and wash with boiling water until the washings are no longer acid to litmus. Bring to the boil some quantity of sodium hydroxide solution under a reflux condenser. Wash the residue on the linen into the flask with 200 ml of the boiling sodium hydroxide solution. Immediately connect the flask with the reflux condenser and boil for exactly 30 minutes. Remove the flask and immediately filter through the filtering cloth. Thoroughly wash the residue with boiling water and transfer to a Gooch crucible prepared with a thin but compact layer of ignited asbestos. Wash the residue thoroughly first with hot water and then with about 15 ml of ethyl alcohol, 95 percent by volume. Dry the Gooch crucible and contents at 105 $\pm$ 2°C in an air-oven to constant weight. Cool and weigh. Incinerate the contents of the Gooch crucible in an electric muffle furnace at 600 $\pm$ 20°C until all the carbonaceous matter is burnt. Cool the Gooch crucible containing the ash in a desiccator and weigh.

E-3. CALCULATION

E-3.1 Crude fibre (on dry basis), percent by mass $= \frac{100 (W_1 - W_2)}{W}$

where

W_1 = mass in g of Gooch crucible and contents before ashing,

W_2 = mass in g of Gooch crucible containing asbestos and ash, and

W = mass in g of the dried material taken for the test.

APPENDIX F

[*Table* 1, *Item* (vi)]

DETERMINATION OF ALCOHOLIC ACIDITY

F-1. REAGENTS

F-1.1 Neutral Ethyl Alcohol — 90 percent by volume.

F-1.2 Standard Sodium Hydroxide Solution — approximately 0·05 N.

F-1.3 Phenolphthalein Indicator Solution — Dissolve 0·1 g of phenolphthalein in 100 ml of 60 percent (v/v) rectified spirit.

F-2. PROCEDURE

F-2.1 Weigh 5 g of sample into a conical stoppered flask and add 50 ml of neutral ethyl alcohol. Stopper, shake and allow to stand for 24 hours, with occasional shaking. Filter the alcoholic extract, through a dry filter paper. Titrate 10 ml of the combined alcoholic extract against standard sodium hydroxide solution using phenolphthalein as indicator. Calculate the percentage of alcoholic acidity as sulphuric acid.

F-3. CALCULATION

F-3.1 Alcoholic acidity (as H_2SO_4), with 90 percent alcohol, percent by mass $= \frac{24{\cdot}52\ AN}{W}$

where

A = volume in ml of standard sodium hydroxide solution used in titration,

N = normality of standard sodium hydroxide solution, and

W = mass in g of the material taken for the test.

APPENDIX G

[*Table* 1, *Item* (vii)]

DETERMINATION OF GRANULARITY

G-1. PROCEDURE

G-1.1 Transfer about 10 g of the material to 600-micron IS Sieve (*see* Note) and sieve for 2 minutes. Brush the upper surface of the sieve and sieve again for one minute.

NOTE — In case 600-micron IS Sieve (conforming to IS : 460-1962*) is not available, BS Test Sieve 25, ASTM Sieve 30 or Tyler Test Sieve 28, which have their apertures within the limits specified for this IS Sieve, may be used.

G-1.2 The material shall be considered to satisfy the test if the residue left on the sieve does not exceed 0·2 percent by weight.

*Specification for test sieves (*revised*).

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